

## **REMARKS**

### **I. Introduction**

Claims 13 to 25 are pending in the present application. Reconsideration of the present application is requested.

Applicants respectfully request that the kindly Examiner acknowledge the claim for foreign priority and indicate that the certified copy of the priority document has been received from the International Bureau.

Applicants respectfully request that the Examiner indicate consideration of the previously filed Information Disclosure Statement, PTO-1449 paper and cited references.

### **II. Rejection of Claims 13 to 23 Under 35 U.S.C. § 102(b)**

Claims 13 to 23 were rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Patent Application No. 50-36361 ("Kanebo"). Applicants respectfully submit that this rejection should be withdrawn for the following reasons.

To anticipate a claim, each and every element as set forth in the claim must be found in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). That is, the prior art must describe the elements arranged as required by the claims. In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). It is respectfully submitted that Kanebo does not teach each and every limitation of claims 13 to 23, as explained in detail below.

Claim 13 recites a protective layer that is relatively permeable for CO<sub>2</sub> and is relatively impermeable for SO<sub>2</sub>, including a gas-permeable carrier made of a material that is resistant to sulfuric acid media including SO<sub>2</sub> and SO<sub>3</sub> and a gas-permeable carrier

made of a material that is resistant to sulfuric acid media including SO<sub>2</sub> and SO<sub>3</sub>, and a **hollow area disposed in the carrier, bounded by an inner surface that can be exposed to a gas and is provided with a coating of an oxidizing agent** having an oxidation potential that is sufficient to oxidize SO<sub>2</sub>. Claims 14 to 23 depend from claim 13.

Kanebo purports to relate to an apparatus for cleaning air in the passenger area of an automobile. (English Abstract). The Office Action admits that Kanebo discloses activated carbon which is “packed into a container,” as stated in the abstract of Kanebo. (Office Action, page 2). The filter disclosed in Kanebo is merely a conventional type of activated carbon filter, which, as stated in the Applicants' specification, is “designed as compressed powder pellets or granules,” packed into a container. One of the disadvantages of this type of conventional filters, as noted in the “Background Information” section of Applicants' specification, is that the CO<sub>2</sub> molecules must first penetrate through the packed granule material, thereby greatly prolonging the period of time needed for the CO<sub>2</sub> molecules to reach the sensor. (Specification, page 1, line 23 to page 2, line 8.) When used, for example, in a smoke detector, this increased response time may be quite undesirable.

Claim 13 recites that the carrier includes **a hollow area disposed in the carrier, bounded by an inner surface that can be exposed to a gas and is provided with a coating of an oxidizing agent**. As stated in the Applicants' specification, “there is a probability according to the laws of probability for the molecules striking the inside wall of the tube coated with the oxidizing agent.” While Kanebo describes **granules packed into a container**, this teaching does not meet the limitations of claim 13, which recites that **a coating** of an oxidizing agent is provided on **an inner surface** of the **carrier**. In the “Response to Arguments” section of the Office Action, the Examiner contends that the “coating of an oxidizing agent . . . is merely the layer of activated carbon impregnated with potassium permanganate for oxidizing SO<sub>2</sub>.” While the Examiner appears to be arguing that “the layer of activated carbon impregnated with potassium permanganate for oxidizing SO<sub>2</sub>” is equivalent of the claimed “coating” provided on an inner surface of the carrier, the English Abstract of Kanebo clearly indicates that **“the layer of activated carbon” is not**

**coated on the inner surface of the honeycomb.** The English Abstract of Kanebo indicates that the apparatus of Kanebo “has a filter for acid gas removal, a layer of activated C, a heat exchanger, and a honeycomb catalyst for CO removal.” Furthermore, the English Abstract of Kanebo further indicates that “the layer of activated carbon impregnated with potassium permanganate” is “**packed in a container,**” which is **completely different** from the “CO-removing honeycomb . . . prepared by coating a cordierite honeycomb . . . with Al<sub>2</sub>O<sub>3</sub> and Pd.” Accordingly, Kanebo clearly does not disclose, or even suggest, providing *on an inner surface of the carrier a coating of an oxidizing agent having an oxidation potential that is sufficient to oxidize SO<sub>2</sub>,*” as recited in claim 13. Furthermore, Applicants respectfully submit that packing carbon granules in a container is simply not equivalent to “coating” an inner surface of a carrier, as recited in claim 13.

For the foregoing reasons, it is respectfully submitted that claim 13 is allowable over Kanebo. As for claims 14 to 23, which depend from claim 13, and therefore include all of the features of claim 13, it is respectfully submitted that claims 14 to 23 are allowable for at least the same reasons given above in support of claim 13.

Independent of the above, dependent claims 18, 19 and 21-23 are allowable over Kanebo for additional reasons. While the Examiner contends that “a block having a plurality of axially parallels [*sic*] round cylindrical tubes aligned side by side in a radial alignment relative to one of a straight line and a point” is shown in Figs. 2(a)-2(f) of Kanebo, these figures of Kanebo do not actually show the claimed features, i.e., “axially parallel **cylindrical tubes** aligned side by side,” as recited in claim 18, and “**cylindrical tubes** that correspond to round cylinders,” as recited in claim 19. Furthermore, the Office Action does not even allege that Kanebo discloses, and it is respectfully submitted that Kanebo does not disclose, “tubes having a **cross section that tapers** toward the one of the straight line and the point,” as recited in claim 21; “a gas-permeable carrier including at least one grid having intersecting grid rods,” as recited in claim 22; or “a gas-permeable carrier including a block having a plurality of grids stacked one above the other that are provided with the oxidizing agent,” as recited in claim 23. For these additional reasons,

claims 18, 19 and 21-23 are allowable over Kanebo.

For the foregoing reasons, it is respectfully requested that the rejection of claims 13 to 23 be withdrawn.

### **III. Rejection of Claims 24 and 25 Under 35 U.S.C. § 103(a)**

Claims 24 and 25 were rejected under 35 U.S.C. § 103(a) as being anticipated by Japanese Patent Application No. 06-186198 ("Tokuyama") in view of Japanese Patent Application No. 50-36361 ("Kanebo"). Applicants respectfully submit that this rejection should be withdrawn for the following reasons.

In rejecting a claim under 35 U.S.C. § 103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

Claim 24 relates to a CO<sub>2</sub> sensor, including a protective layer that includes a gas-permeable carrier made of a material that is resistant to sulfuric acid media including SO<sub>2</sub> and SO<sub>3</sub>, and a hollow area disposed in the carrier, bounded by an inner surface that can be exposed to a gas and is provided with a coating of an oxidizing agent having an oxidation potential that is sufficient to oxidize SO<sub>2</sub>, the protective layer separating the CO<sub>2</sub> sensor from a room to be monitored for a CO<sub>2</sub> content. Claim 25 depends from claim 24.

As explained above in connection with claim 13, Kanebo does not disclose, or even suggest, all of the above-recited features of claim 24, e.g., a hollow area disposed in the carrier, bounded by an inner surface that can be exposed to a gas and is provided with a coating of an oxidizing agent. Similarly, Tokuyama also fails to disclose the above-recited features of claim 24, and the Office Action does not even allege that Tokuyama discloses such features.

Furthermore, the Office Action admits that “[Kanebo] does not teach that this filter be used as a protective layer for separating a carbon dioxide sensor from a room to be monitored for carbon dioxide.” (Office Action, page 3.) Tokuyama relates to a carbon dioxide sensor including a filter made of zeolite placed at a distance from a carbon dioxide sensor element, which is heated. The filter converts organic gas contacting the sensor element into carbon dioxide. (Tokuyama, Abstract). Therefore, the combination of Kanebo and Tokuyama fails to disclose, or even suggest, all of the features of claim 24, e.g., a protective layer that includes a gas-permeable carrier made of a material that is resistant to sulfuric acid media including  $\text{SO}_2$  and  $\text{SO}_3$ , or that the protective layer separates the  $\text{CO}_2$  sensor from a room to be monitored for a  $\text{CO}_2$  content. Furthermore, there is no suggestion in the applied references to combine the Kanebo apparatus for cleaning the air in the passenger area of an automobile with the Tokuyama carbon dioxide sensor.

For the foregoing reasons, it is respectfully submitted that claim 24 is allowable over the combination of Tokuyama and Kanebo. As for claim 25, which depends from claim 24, and therefore include all of the features of claim 24, it is respectfully submitted that claim 25 is allowable for at least the same reasons given above in connection with claim 24. It is therefore respectfully requested that this rejection of claims 24 and 25 be withdrawn.

**IV. Conclusion**

In light of the foregoing, it is respectfully submitted that all pending claims are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

Dated: February 26, 2004

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